

Best Practice on Environmental Policy in Asia and the Pacific: Chapter 6

Policies for Environmentally Sustainable Transport

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This paper examines the transfer and diffusion of sustainable transport policies around the world and reviews the implications for policy-making in the Asia-Pacific region. Through a focus on a range of good practice case studies, this paper investigates why there are significant differences in the major factors involved in the transfer of sustainable transport policies depending on the geographical direction of transfer. Pattern matching analysis and comparative case study revealed that: there are significant transfers of sustainable transport policies from developing countries to both developing and developed countries; international organizations play a crucial role in policy transfers towards the South; the role of political leadership is important in transfers from the South; and the speed at which redistributive policies were diffused was slower than other kinds of policies. The case studies used in the analysis were collected by the project Research on Innovative and Strategic Policy Options (RISPO), which was led by the Institute for Global Environmental Studies, Hayama, Japan. It is part of a series of eight linked papers in this special issue of the *International Review for Environmental Strategies (IRES)*. This study draws on the RISPO Good Practices Inventory to provide useful lessons for environmental policymakers in developing countries.

Keywords: environmental policy, sustainable development, sustainable transport, policy transfer, policy diffusion

1. Introduction

The dataset used for the analysis in this paper is based on a series of good practice case studies for sustainable transport. These were collected for the Research on Innovative and Strategic Policy Options (RISPO) sub-project of the Asia-Pacific Environmental Innovation Strategy Project (APEIS). A pattern-matching analysis was used to identify the case studies that involved policy transfer. These case studies were then categorized into four groups according to the direction of policy transfer between and among countries in the North and the South. A comparative case study was conducted focusing on the actors involved in the policy transfers and the characteristics of the policies that were transferred and diffused.

Some of the good practice cases show that the learning, transfer, and policy diffusion processes are actually ongoing in this field. For example, the bus rapid transit (BRT) systems in Quito in Ecuador and Bogotá in Colombia clearly referred to the pioneering BRT system in Curitiba, Brazil (Matsumoto 2002). BRT has now been transferred to Asia and is being widely diffused. Cities in both developed and developing countries are struggling to find sustainable transport solutions to meet the serious challenges of congestion, air pollution, and global warming resulting from urbanization and motorization.

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The pattern matching analysis revealed that there are significant transfers of sustainable transport policies from developing countries to both developing and developed countries, although literature on policy transfer has previously focused mainly on the northern hemisphere. Comparative analysis of the case studies indicates that international organizations play a crucial role in policy transfers towards the South, and that the role of political leadership is important in transfers from the South. The speed at which redistributive policies were diffused was found to be slower than other kinds of policies, presumably due to resistance from potential losers.

While there have been various studies on policy transfer, their geographical scope has been limited to developed countries, and the literature on policy transfer in the field of sustainable transport is very sparse. Therefore, this paper examines the transfer and diffusion of sustainable transport policies around the world and reviews the policy implications for the Asia-Pacific region.

2. Literature review

In the area of environmental policy, the concept of policy transfer (the process by which knowledge and experience of policy from one location is used in policy development in other countries and other political systems), is considered a powerful analytical tool in accounting for policy trends (Rose 1991). The concepts of policy transfer, policy diffusion, and lesson-drawing are discussed in detail in chapters 1–3 of the linked series of papers in this issue of the *International Review for Environmental Strategies* (King and Mori 2007a, 2007b, 2007c).

Existing literature on policy transfer mainly focuses on transfer among and from developed countries. Although there are some studies on policy transfer from the South to the North (Nedley 2000; 2004) and between countries in the South (Evans and Lana 2004), attention to the southern hemisphere is still very limited and there is a need to expand the policy transfer framework to identify or remove the directional issue as a constraint (Rose 1999; Stone 1999; Nedley 2000; Bennett 2001; Evans 2004a; 2004b).

3. Approach and methodology

Recognizing the lack of policy transfer studies that take in the Southern perspective, this paper attempts to analyze policy transfer in the area of sustainable transport by adopting “a three-hundred-and-sixty degree perspective” (Nedley 2000; 2004).

3.1. Research question

Dolowitz and Marsh (1996; 2000) identified seven key questions on the study of policy transfer: (i) why do actors engage in policy transfer? (ii) who are the key actors involved in the policy transfer process? (iii) what is transferred? (iv) from where are lessons drawn? (v) what are the different levels of transfer? (vi) what restricts or facilitates the policy transfer process? And (vii) How is the process of policy transfer related to policy “success” or policy “failure”? To properly explore the question of policy transfer to and from the South, the first focus of this research corresponds to the fourth question: from where are lessons drawn and where are they applied? Thus, the central research question is: “why are the factors involved in the transfer of sustainable transport policy instruments significantly different

depending on the direction of transfer (i.e. North–North, North–South, South–North, and South–South), and what are the primary reasons for these differences?”

3.2. Hypotheses

Hypothesis 1: International organizations play important roles in sustainable transport policy transfer.

Hypothesis 2: Strong political leadership can provide an opportunity structure for policy transfer.

Hypothesis 3: Policy innovations that utilize redistributive economic instruments are slow to diffuse.

Previous studies have identified the importance to the policy transfer process of international organizations or transnational networks acting as “agents of diffusion” (Jørgens 2001; Tews, Busch, and Jørgens 2003; Evans 2004c). Rose (1993, 105) stated that “intergovernmental and international organizations encourage exchanges of ideas between countries with similar levels of economic resources”, mentioning the examples of the European Community and the Organisation for Economic Co-operation and Development (OECD). Rose also observed that the programs of international bodies such as the World Bank and United Nations agencies tend to focus on developing countries. Evans and Lana (2004) found that international organizations open up channels for lesson-drawing and policy transfer between developing countries by encouraging emulation of “best practice”, and in some cases financing implementation of best practice projects.

Thus, via hypothesis 1, this paper first examines the role of international organizations in the transfer of sustainable transport policies in each direction of transfer.

Another important actor besides international organizations is government. Evans (2004c) developed the hypothesis that “changes in government can provide an opportunity structure for policy change to occur”. In the transport arena, there have recently been some prominent policy changes initiated by city mayors, such as the introduction of BRT in Bogotá, and the congestion charge (road pricing) in London. Hypothesis 2 modifies that of Evans (2004c) to address the role of political leadership in policy transfer.

The background literature shows the need to take into consideration the specific characteristics of policy innovation. Redistributive or regulatory measures may be more difficult to apply than distributive or win-win policies, and thus determine the speed of policy diffusion. Based on a case study on diffusion of energy/carbon taxes, Tews, Busch, and Jørgens (2003) concluded that “policy innovations with a high conflict potential due to their redistributive effects are less likely to rapidly diffuse”. Hypothesis 3 addresses this question.

3.3. Approaches

Evans (2004b) has identified four major approaches used in policy transfer analysis: process-centred approaches; ideational approaches; comparative approaches; and multi-level approaches. The process-centered approach considers the agents of transfer to be the critical factor in policy transfer. It contends that “policy learning is largely based on the interpersonal interaction between agents of transfer, bureaucrats and politicians within interorganizational settings”, where there exists a “common kinship” and “agreed culture” (Evans 2004b). This approach can provide a descriptive understanding of policy development and explain certain aspects of the transfer process by demonstrating who has relationships

with whom, and it can describe how these relationships influence policy making. This approach has several shortcomings, however, such as insufficient reflection on the role of exogenous forces, too little

Table 1. Details of the case studies used in the study on policies for sustainable urban transport

Subtheme	Case studies	Cities and countries	Partner institutes
Development of environmentally sustainable transport systems in urban areas	22	Curitiba, Brazil; Beijing, China; Shanghai, China; Bogotá, Colombia; Quito, Ecuador; Fukuoka, Japan; Sapporo, Japan; Kathmandu, Nepal; Seoul, South Korea; Singapore; Bangkok, Thailand	Asian Institute of Technology, the Energy Research Institute of China, UNEP Collaborating Centre on Energy and Environment ^a

Notes: a. The name of the UNEP Collaborating Centre was changed to UNEP Risoe Centre on Energy, Climate and Sustainable Development in 2003.

empirical evidence, and an almost exclusive focus on voluntary policy transfer between developed countries.

Ideational approaches focus on how politicians and policymakers “learn how to learn”, and address the issue of when and how this learning takes place. Four categories of ideational approach have been identified: discursive, epistemic community, social learning, and organizational learning (Evans 2004b). Although this approach can help policy analysts in identifying potential obstacles to policy transfer, and give insights into how to develop a “learning” organization, it has been criticized for its empirical weakness.

Studies that use a comparative approach normally compare two cases, or analyze a cross-national aggregate sample. However, the comparative approach has a danger of overemphasizing broader structural factors and can overlook the role of agencies or the process of transfer itself. In addition, proving that policy transfer actually took place is sometimes difficult using such approaches (Evans 2004b).

Multi-level approaches are characterized by “a concern with understanding outcomes of policy transfer through combining macro and micro, or macro, meso, and micro levels of enquiry” (Evans 2004b, 20). This approach can yield the most comprehensive explanations of policy transfer but can be too complex due to the identification of too many variables. Careful theorization and appropriate integration of levels of analysis is necessary.

This paper employs the comparative approach using 22 good practice case studies collected from cities in Asia and Latin America for the sustainable transport sub-project of RISPO, in collaboration with participating research organizations (see table 1).

Good practice cases were selected to cover various issues around sustainable transport including: integrated land-use planning (Matsumoto 2002; Dhakal 2003a); public transport (Zhu, Yu and Jiang 2003; Yu 2002a; Lee 2003; Rogat 2003; Matsumoto 2002; Memon 2003); bicycle lanes (Zhu 2004); traffic-demand management, such as road-pricing (Dhakal 2003a; Yoon 2003); car-free days

(Laosirihongthong *et al.* 2004); car sharing (Matsumoto 2003); environmental education on car use (Matsumoto, 2004); regulation of emissions from gasoline vehicles (Liu 2003; Zhu and Jiang, 2003a; Pant, Kumar, and Shrestha 2004a, 2004b); and alternative fuel vehicles (Yu 2002b; Zhu and Jiang 2003b; Dhakal 2003b). Another important criterion in the selection of good practice cases was their applicability to developing countries in the Asia-Pacific region. Information about the 22 good practices with respect to critical instruments, impacts, lessons learned, and their potential for application, was collected based on a literature review, interviews with experts and people concerned, and an interactive workshop with policymakers.

The analysis of the case studies combined a qualitative, comparative, case-by-case analysis with a relatively simple form of textual pattern matching based on that proposed by Yin (2002). Pattern matching analysis was done for three categories of variables: actors, policy content, and processes. Pattern matches were sought against approximately 540 possible explanatory factors. For the details of this methodology, see chapter 3 of this linked series of papers (King and Mori 2007c).

The pattern matching analysis on process factors helped to screen the 22 good practice cases to focus on those that clearly involved a process of policy transfer. The selected cases include: car sharing in Fukuoka (Matsumoto 2003); travel awareness initiative in Sapporo (Matsumoto 2004); emission standard in Beijing, Shanghai, and Bangkok (Liu 2003; Zhu and Jiang 2003a; Pant, Kumar, and Shrestha 2004a); BRT in Curitiba, Quito, and Bogotá (Matsumoto 2002; Lee 2003; Rogat 2003); road pricing in Singapore (Dhakal 2003); and a number-plate bidding system in Singapore (Dhakal 2003) and Shanghai (Liu 2003).¹

Based on the screening results, cases of policy transfer were categorized according to the direction of policy-transfer among locations as follows: (i) from developed to developed countries (North–North transfer); (ii) from developed to developing countries (North–South transfer); (iii) from developing to developed countries (South–North transfer); and (iv) from developing to developing countries (South–South transfer).

The definition of “developing country” is crucial to the categorization of the direction of policy transfer. This study follows the definitions used by the OECD in its list of aid recipients (OECD 2005). Among the locations where good practices were collected, Singapore needs special consideration. It transferred from developing country to developed country status in 1996, so accordingly this study treats Singaporean policies introduced before 1996 as developing country policies and those introduced after that year as developed country policies.

Based on the categorization, policy transfer cases were analyzed qualitatively and compared, with a focus on the other two key groups of variables—actors and policy content—as independent variables.

This methodology has some advantages over the past studies of policy transfer. First, by analyzing multiple cases the results are broad in scope. Second, the analysis is based on more detailed data than can be gleaned from a cross-national aggregate sample. Third, it focuses on two independent variables and avoids too much complexity, which is one of the drawbacks of a multi-level approach.

1. Exceptions are road pricing, number plate bidding system, and car sharing. In all of these case studies, the case study texts did not refer to policy transfer, but external sources provided additional information.

On the other hand, the limitations of this methodology reveal the need for additional research. First, more in-depth data collection on the process of policy transfer is required in order to grasp the entire policy-transfer process in each case. Second, although the Good Practice Inventory on which this analysis is based (<http://apfed-db.iges.or.jp/rstbpbpp.php>) was developed to provide an information database for decision making (in other words, to facilitate policy transfer), it was not specifically developed for the sake of research into policy transfer processes. For this purpose the number of sample cases should be increased. Third, more research is needed into the impact of broader structural factors on micro-decision-making settings, as proposed by Davies and Evans (1999), whereas this analysis is focused on decision-making in organizations.

Table 2. Categorization of policy transfer cases

Direction	Policy option	Source and year of adoption	Borrower and year of adoption
North–North	Car sharing	Dortmund, Germany (around 1990)	Fukuoka, Japan (2002)
	Travel awareness initiative	Adelaide, Australia (1996)	Sapporo, Japan (2000 ^a)
North–South	Car-free days	Europe ^b (1998)	Bangkok, Thailand (2001)
	Emission standards	Europe (1992, 1996 ^c)	Beijing, China (1998, ^d 2003 ^e); Shanghai, China (1999, ^f 2002 ^g) Thailand ^h (1993)
South–North	Bus rapid transit	Taiwan (1992 ⁱ)	Thailand ^j (2001)
	Road pricing	Curitiba, Brazil (1974)	Los Angeles, USA (1999)
South–South	Road pricing	Singapore (1975)	London, UK (2003)
	Bus rapid transit	Curitiba (1974)	Quito, Ecuador (1995), Bogotá, Colombia (2000)
	Number-plate bidding system	Singapore (1990)	Shanghai (2000)

Notes: a. Pilot test was conducted in 1999. b. When the walking street scheme in Bangkok was introduced, no specific city was referred to, although the National Energy Policy Office was aware of the experience of other cities, including Paris (*The Nation* 2001). c. The Euro 1 standards were adopted in 1992 and the Euro 2 standards in 1996. d. The standard was issued in 1998 and came into effect in 1999. e. Euro 1. f. Euro 1. g. Euro 2. h. This good practice focuses on motorcycles and does not include four-wheeled vehicles. i. Taiwan has implemented three phases of emission standards since 1992 with increasing strictness (Manufacturers of Emission Controls Association 1999). j. The same applies for Thailand as Taiwan (see note i).

4. Findings

4.1. Results from pattern matching

In relation to actors, the role of civic engagement (e.g. public-private partnerships and industry associations) was noted in about one third of the cases. More significant, however, was the role of local government (in 86 percent of cases) and sectoral agencies at the national level (36 percent). From an institutional perspective, the key success factor was the availability of funding (91 percent) sourced from local government (50 percent), external sources (45 percent) and the private sector (32 percent).

The possible importance of “user-pays” systems to recover part or all of the capital costs was noted in 27 percent of the cases. The role of the private sector (59 percent), technical advisers (41 percent) and NGOs (23 percent) in these successful cases was also notable.

The analysis of policy content, perhaps surprisingly, shows the almost equal importance of direct intervention (50 percent), command-and-control measures (50 percent), and market-based instruments (55 percent). Under command-and-control measures, the use of permits and restrictions was the most important policy instrument (45 percent), while under direct interventions, tax-funded infrastructure (50 percent) was the main instrument used. This shows that there is no “one-size-fits-all” approach to successful policy intervention in the domain of sustainable transport. Several cases demonstrate combinations of these success factors indicating that optimal policy mixes may be more important than single policy instruments.

One of the noteworthy results of the coding analysis regarding the sustainable transport policy process relates to the “source of policy innovation.” The coding analysis revealed that, out of 22 good practice cases documented, only two—the road pricing and number-plate bidding system in Singapore (Dhakal 2003) and the BRT system in Curitiba (Matsumoto 2002)—were authentic policy innovations. Ten good practice cases were clearly “transferred” from innovation in other countries. The sources of policy innovation were not only from developed countries but also developing countries, as discussed in detail in the following sections.

4.2. Categorization of policy transfer cases

Following the results from the pattern matching, this study identified eight policy transfer cases and categorized them according to the direction of policy transfer, as shown in table 2.

It should be noted that even if two different cities adopt similar policies, those policies might have originated in different places meaning there is no real transfer. To avoid inclusion of such cases in this study, the evidence of transfer was confirmed by tracking the texts of good practice inventory and external sources that included newspaper articles, interviews, and personal communication.

a. North–North transfer

For North–North transfer, two policy innovations were identified: car sharing and travel awareness initiatives. A car sharing system can be thought of as organized short-term car rental (Shaheen et al. 1998). The first car sharing system was introduced in 1987 in central Switzerland. Another program started shortly afterwards in Zurich and around a year later a similar scheme was introduced in Berlin. These developments took place independently of one another. In Switzerland, the idea of car sharing soon resulted in successful growth (Muheim and Partner 1998). Schemes subsequently spread to Austria and the Netherlands. More recently, car sharing organizations have been established in the UK, Denmark, Italy, France, Ireland, Norway, Scotland, and Sweden, as well as in Canada and the USA (Enoch 2002; Shaheen et al. 1998). Car sharing has recently started in a small way in Australia. In Asia, car-sharing schemes have been introduced in Singapore since the late 1990s and Japan since the early 2000s. The staff of a car sharing scheme in Fukuoka, Japan, called the Car Sharing Network, actually visited the Stadtauto car sharing system in Dortmund, Germany (Matsumoto 2003). Fukuoka’s car

sharing system also received technological support from the CEV Sharing Corporation in Yokohama, which started the business about six months earlier.

Travel awareness initiatives began to be introduced worldwide in the 1990s. Such programs aim to change travel behavior through, for example, providing targeted information on transport through campaigning and education. Examples include: the TravelWise campaign and the Headstart program in the United Kingdom; the Individualized Marketing Demonstration Program, developed in Europe and later applied in Australia; and the Travel Blending program that started in Australia and was later introduced in the UK, the United States, and Chile (Brog and John 2001; Rose and Ampt 2001). Japan's Travel Feedback program was developed based on the Travel Blending program in Adelaide, Australia.

b. North–South transfer

For North–South transfer, car free days and emission standards were identified as examples. Car-free days are “a limited one-day experiment in banning motorized vehicles from street access” (Wright 2004). The first major nationwide movement of car-free days was started in France in 1998, although Germany upstaged them by holding a car-free event three months earlier. The concept of a pan-European car-free day was promoted in 2000 when the European Commission's Environmental Directorate became a member of the supporting consortium. International Car Free Day is now annually held on 22 September. Bangkok's Silom Street was closed for vehicles and opened for walking and public activities on seven consecutive Sundays in 2001 (Laosirihongthong *et al.* 2004). Other cities outside of Europe that hold a car-free day include Jakarta in Indonesia, Taipei in Taiwan, Bogotá in Colombia, and Toronto in Canada.

Emission standard refers to the maximum amount of air-polluting discharge (such as carbon monoxide, sulphur dioxide, and particulates) legally allowed from a single mobile or stationary source. There are three main international approaches to mobile emission standards: European (Euro), American (Tier), and Japanese. The European Union (EU) adopted Euro 1 standards in the early 1990s and introduced tighter standards in several steps: Euro 2 in 1996, Euro 3 in 2000, and Euro 4 in 2005. Most countries in Asia have subsequently adopted the European standards, albeit with a slight time lag. Chinese cities such as Beijing and Shanghai adopted Euro standards for light-duty vehicles ahead of the national schedule. The Beijing municipal government issued the Euro 1 standard in 1998, which came into force in 1999, and introduced the Euro 2 standard in 2003. Shanghai's local government started implementation of Euro 2 in 2002. With regard to two-wheelers, Thailand enforced the standards in four steps. The first two in 1993 and 1995 were based on European standards and the fourth step introduced in 2001 was similar to the Taiwanese standard, considered to be the most advanced standard for two-wheelers (Asian Development Bank 2003).

c. South–North transfer

In the category of South–North transfers, BRT and road pricing were identified. BRT is a system that emphasizes priority for, and rapid movement of, buses by securing segregated busways (International Energy Agency 2002). The BRT concept began in Curitiba and this policy option is being transferred both toward the North and the South. In North America, a number of cities have begun to develop BRT systems, including Honolulu, Los Angeles, and Pittsburgh in the United States, and Ottawa in Canada. In Oceania, Adelaide and Brisbane in Australia have adopted BRT systems. In Europe, BRT is

becoming increasingly common. In the UK alone, there are schemes in Ipswich, Leeds, London, and Reading. In the South, BRT is becoming widespread in the South American region. In Brazil there are BRT programs in Belo Horizonte, Campinas, Goiania, Porto Alegre, Recife, and Sao Paulo. There are also BRT schemes in Bogotá and Quito. Cities in Asia are also starting to introduce BRT. There are systems in Jakarta, Nagoya in Japan, Seoul, and Taipei. Introduction of BRT is being considered in Bangkok, Beijing, Delhi and Hyderabad in India, and Dhaka in Bangladesh (International Energy Agency 2002; Wright and Fjellstrom 2002; Institute for Transportation and Development Policy 2003; Fjellstrom 2003a, 2003b; Levinson *et al.* 2003).

Road pricing means that motorists must pay directly for driving on a particular roadway (Litman 2004). In 1975 Singapore was the first country in the world to implement an area road-pricing mechanism, called Area Licensing System (ALS). In 1998, ALS was replaced by Electronic Road Pricing (ERP), a technically advanced mechanism that enables varied charges over time and location. In Europe, road-pricing schemes are in place in Bergen, Oslo, and Trondheim (all in Norway), which started in 1986, 1990, and 1991 respectively (Schwaab and Thielmann 2001; PRoGRESS 2004). In London, a road-pricing scheme aimed at congestion management, called the congestion charge, came into force on 17 February 2003 (Transport for London 2005).

d. South–South transfer

Two policy options fell into the category of South–South transfer. One is BRT (Matsumoto 2002; Lee 2003; Rogat 2003), dealt with above, the other is the number-plate bidding system (Dhaka 2003; Liu 2003). First introduced in Singapore as the Vehicle Quota System (VQS) in February 1990, the VQS is an innovative mechanism to limit the total number of vehicles on the road, and uses a market-based approach. In the VQS, the government fixes the total number of vehicles allowed on the road, and prospective vehicle owners must obtain a certificate for owning a vehicle through open bidding. Shanghai introduced similar measures to control the number of plates issued since 1986 and brought in a bidding system similar to Singapore's VQS in 2000 (*Wall Street Journal* 2004; Liu 2005).

Variations in the extent of transfer of the cases shown in table 2 should be noted. For example, the travel awareness initiative in Sapporo (the Travel Feedback program, Matsumoto 2004), was developed based on Adelaide's Travel Blending program. In the case of car free days in Thailand (the Walking Street program) it is obvious from a speech by the Deputy Prime Minister that the National Energy Policy Office (NEPO) was aware that other cities, such as London and Paris, had similar programs (*The Nation* 2001). However, at the design stage of the program, the task force given responsibility for the project by NEPO did not review any practice from other countries and relied mainly on expert discussions (Laosirihongthong 2005). The degree of the transfer in the latter case is limited to inspiration, whereas the former case heavily relies on the original.

4.3. Key actor variables

The key actor variables in these various examples of policy transfer were identified based on the texts of the RISPO Good Practices Inventory and external sources, which included newspaper articles, information obtained from interviews, communication with the concerned individuals, and other

literature (table 3). In this analysis, *key actor* refers to organizations or individuals that were engaged in: seeking the policies or programs to be transferred; making decisions about the introduction of policies or programs; developing the details of policies or programs in the borrowing location; and funding the policies or programs. The term excludes those who took part in implementation stages. The main categories of actor follows the work of Dolowitz and Marsh (1996 and 2000), and includes elected officials; political parties; bureaucrats and civil servants; pressure groups; policy entrepreneurs and experts; transnational corporations; think tanks; and supra-national, governmental, and NGO consultants. Four new categories (domestic NGO, private company, citizens, and government of foreign country) were added to the list since they did not fall into any of the categories of Dolowitz and Marsh.

Table 3. Key actors in policy transfer, by direction of transfer and individual policy

Key actor categories	North–North policy transfer		North–South policy transfer		South–North policy transfer		South–South policy transfer	
	Car sharing	Travel awareness initiative	Car-free day	Emission standard	Bus rapid transit	Road pricing	Bus rapid transit	Number plate auction
Elected officials	–	–	–	–	Mayor	Mayor, Local councils	Mayor	–
Political parties	–	–	–	–	–	–	–	–
Bureaucrats/civil servants	Local government	Regional branch of national government	National government	Local government	Local transport authority	Local government body for transport	Local government	Central government
Pressure groups	–	–	–	–	Local government	Representatives of businesses and road users	Public institutions	Local government
Policy entrepreneurs and experts	–	Academia	Academia	Academia	–	Public institutes	National government	Police officers
Transnational corporations	–	–	–	–	–	–	–	–
Think tanks	–	Development engineers	–	–	–	–	–	–
International organizations	–	–	–	European Union	–	–	International development bank	–
Consultants	–	–	–	–	–	–	–	–
Domestic NGOs	Environmental NGOs	–	–	–	–	–	–	–
Private companies	Power company	–	–	–	–	–	–	–
Citizens	–	–	–	–	–	–	–	–
Foreign government	–	–	–	US Environmental Protection Agency	–	General public	–	–

In relation to hypothesis 1 (international organizations play important roles in sustainable transport policy transfer), the role of an international organization was found important only in the South–South transfer of BRT. For transfer to Bogotá, the World Bank was one of the funding sources for infrastructure of the BRT system. However, it should be noted that it was not the only funding source and other sources included the national government, the Bogotá Mayor’s Office, and stakeholders from the transport sector (Lee 2003). On the other hand, in the case of Quito, international organizations were the only funding sources: the Spanish Development Fund and the Spanish Banco de Bilbao Vizcaya funded the total cost of the first 11.2 km trolley-bus line (US \$57.6 million) (Rogat 2003).

The importance of international organizations in South–South transfer is demonstrated in the now booming transfers of BRT. The Institute for Transportation and Development Policy (ITDP) assisted with the development of BRT in Jakarta in 2004, and other examples include the World Bank in Hanoi (Vietnam), EMBARQ in Shanghai, the Asian Development Bank in Manila (the Philippines), the India Institute of Technology in Delhi, and the Energy Foundation in China (Ernst 2005).

Conversely, in North–South policy transfer international organizations played only minor roles. For example, in the study carried out by Tsinghua University one of the actors in the introduction of Euro standards in Beijing received financial support from the EU and USEPA (Jiang 2005). Although there is no documentation specifically mentioning the policy transfer cases examined in this chapter, some countries in Asia relied on the United Nations Economic Commission for Europe (UNECE) in adopting the Euro standard (Asian Development Bank 2003). Except for South–South policy transfer, the examined cases did not show significant evidence of involvement of international organizations. However, it should be noted that potential agents of North–North policy transfer exist outside Asia, such as the European Conference of Ministers of Transport (ECMT) and the OECD. However, since our focus when collecting the case studies was on good practices potentially applicable to developing Asian countries, the role of those organizations is not reflected in this analysis.

International organizations not only play an important role in policy transfer as “policy entrepreneurs”, but may also play a coercive role by demanding policy reform as a condition of lending (Evans and Lana 2004). Where the desire for funding is greater than the commitment to the policy reform, implementation is generally less than successful.

Regarding Hypothesis 2 (strong political leadership can provide an opportunity structure for policy transfer), political leadership played a prominent role in three of the policy transfer cases. The first is the transfer of road pricing from Singapore to London. In 2000 the Mayor of London Ken Livingstone included proposals for a scheme to reduce congestion in London in his election manifesto, and was later instrumental in introducing the congestion charge when in office (Transport for London 2005). The second is the adoption of BRT in Bogotá (Lee, 2003), which drew on the extant system in Curitiba. Enrique Penolosa was mayor when the city introduced the system, and his commitment and expansive vision were key to its success. A third example is the introduction of BRT in Los Angeles. Los Angeles started to develop its BRT system after a visit by the then Los Angeles mayor Richard Riordan to Curitiba (Hook and Wright 2002).

Table 4. Policy content and transfer flow, by transfer direction and policy

Major policy content	North–North policy transfer		North–South policy transfer		South–North policy transfer		South–South policy transfer	
	Car sharing	Travel awareness initiative	Car-free day	Emission standard	Bus Rapid Transport	Road pricing	BRT	Number plate auction
Command-and-control instruments	–	–	–	Setting emission standard	–	–	–	–
Market-based instruments	–	–	–	–	–	Charging entry to city centre	Cross subsidy by single fare	Price setting through bidding mechanism
Direct intervention	–	–	–	–	Provision of busways and related infrastructure	–	Provision of busways and related infrastructure	–
Creation of new markets	Funding for launch	–	–	–	–	–	–	Creation of bidding market for number plates
Information-based instruments	–	Educational program development	Awareness-raising activities	–	–	–	–	–

A common element in these three cases is the institutional arrangement of local transport bodies. Transport for London (TfL) was responsible for both the planning and implementation of the mayor's transport strategy. It made recommendations to the mayor on the final plan of the congestion charge scheme after consideration of the results of public hearings. TfL is responsible not only for congestion charges but also for buses, subways, the light-railway system, traffic management, and so on (Transport for London 2005). Bogotá created a new public company, TransMilenio SA, to oversee the development and operation of the BRT system (Wright 2004). The BRT program (Metro Rapid Program) in Los Angeles was initiated by the Board of Directors of the Los Angeles County Metropolitan Transportation Authority (Metro), which is responsible for transportation planning, coordination, construction, and operation of the city's transport systems (Metro 2005). In all three cases the city mayor chaired the board of the city transport body.

Another example where the role of political leadership was instrumental in policy transfer is the introduction of BRT in Seoul in 2004. The Mayor of Seoul, Lee Mung-Bak, visited Curitiba in January 2002 just after his election. He then invited Jaime Lerner, the former mayor of Curitiba who introduced the BRT system, to visit Seoul in March and advise on improving the capital's transport system (*Chosun Ilbo* 2003). This is a case of policy transfer promoted not only by a political leader on the borrower's side but also on the source's side.

Table 3 shows that bureaucrats also play significant roles in all cases of sustainable transport policy transfer. Transport policies are usually set at the local level, except for national standard setting or taxation, and it is normal that local governments are involved in the process of policy formulation. However, the results showed that national governments are also important players, not only in setting national standards (for example, emission standards), but also in local policies and programs. For example, the Walking Street program in Bangkok was initiated and funded by NEPO, a national agency. Also, the travel awareness initiative in Sapporo was initiated and implemented by the Hokkaido Regional Development Bureau, a regional development branch of the Ministry of Land, Infrastructure and Transport (Matsumoto 2004). In the case of BRT in Bogotá, the national government was involved in funding a part of the infrastructure of the system. One of the drivers behind the introduction of the number-plate auction system in Shanghai was pressure from central government to discard the high fees to obtain vehicles (Zhou and Sperling 2001).

Involvement of national governments is observed in all cases of policy transfer towards the South. On the other hand, in policy transfers towards the North, only one case was found where a national government played a role.

4.4. Characteristics of innovation

Table 4 summarizes the policy contents that were transferred. Transfers of command-and-control policies are found for car-free days and emission standards—both North–South transfers (*The Nation* 2001; Zhu and Jiang 2003a; Liu 2003; and Pant, Kumar, and Shrestha 2004a). Market-based instruments are transferred in road pricing (Dhakal 2003a), BRT (South–South transfers) (Lee 2003; Rogat 2003), and number plate auctions (Dhakal 2003a; Liu 2003). Also in the case of BRT, direct intervention policies involving the provision of infrastructure were transferred. Transfer of “creation of new markets” is observed for car sharing, and “information-based instruments” for the initiative on travel awareness and car-free days.

Table 5. Speed and scale of diffusion according to major policy instrument

Major policy type	Policy option	Speed and scale of diffusion
Command-and-control	Emission standard	Most Asian countries introduced at least Euro 1 within 10 years since establishment of Euro 1 in 1992.
Market-based instruments	Road pricing	Adoption in London was 28 years from Singapore's innovation in 1975. This scheme is introduced in only a small number of cities.
	Number plate auctioning	Shanghai adopted this scheme within 10 years from the innovation in Singapore. No other city has introduced this scheme.
Direct intervention	Bus rapid transit	BRT has spread steadily to North and South American cities for a quarter of century. It started to quickly expand to cities in Asia in the early 2000s.
Creation of new markets	Car sharing	Car sharing was spread in European cities in the 1990s and transferred to North America and developing Asia 10 years after initiation.
Information based instruments	Travel awareness initiative	Travel awareness initiatives were starting to be introduced in the 1990s in UK and Australia and introduced in Japan 10 years later.

Table 5 shows the differences in speed and scale of policy diffusion according to major policy type. It is noteworthy that road pricing has taken a long time to be diffused compared to other policy options. Congestion charging was introduced in Norway 15 years after the ALS innovation in Singapore, and 28 years after in London, yet despite its clear success in reducing congestion few cities have had the courage to follow suit. For number-plate auctioning—the other redistributive economic instrument—it took less than 10 years for the first transfer to take place, but the number of occurrences is so far limited to only one city. The above observations appear to confirm hypothesis 3: policy innovations that utilize redistributive economic instruments are slow to diffuse.

Another noticeable phenomenon of diffusion relates to BRT. Since the launch of Curitiba's BRT in 1974, several North American and Latin American cities have introduced segregated busway systems. It started to attract attention from Asian cities after Bogotá successfully transferred the system in 2000 and BRT plans are now booming in Asia. This indicates the possibility of a boosting effect of one successful transfer on the speed of diffusion. It is almost as though one case is seen as a "fluke", while the second (and subsequent) case(s) demonstrate that this policy is worthy of universal application. Therefore, it will be very interesting to keep an eye on the diffusion of road pricing after the successful transfer to London.

Table 5 shows that the innovative policies developed in Curitiba and Singapore were transferred to other countries and diffused. The true core of the innovations in Curitiba and Singapore was the unified approach and the integration of land-use planning: BRT, road pricing and number-plate auctions are part of their integrated planning policy. However, the transfer of the all important land-planning component in those cities was hardly observed in the transfer process. This might be explained by the lack of standard technical solutions in land-use planning (Tews et al. 2003), or it could be that the land-use

planning involves winners and losers in the property market, and this aspect is viewed as excessively redistributive.

Another explanation could be isolated sectoral thinking. Usually land-use planning involves policy from sectors other than the transport sector. Without good cross-sectoral communication and high level coordination, the officials responsible for land-use planning policy may not be brought into the picture early enough. Dolowitz and Marsh (2000) refer to transfers that are missing crucial elements of what made the policy or institutional structure a success in the originating country as “incomplete transfer.” In planning transfers of policies such as BRT and road pricing, policymakers should pay attention to those factors.

5. Conclusions

It was found that many good practices in the field of sustainable transport are actually transferred from other countries. In the case of the good practices collected for RISPO, only three cases, namely BRT in Curitiba, and road pricing and the number-plate bidding system in Singapore, were genuinely national innovations.

Although policy transfer literature generally focuses on transfer in the North, this research shows that there are also significant transfers from developing countries to both developing and developed countries. South–North transfers include BRT from Curitiba to Los Angeles, and road pricing from Singapore to London. Examples of South–South transfer were BRT from Curitiba to Quito and Bogotá, and the number-plate bidding system from Singapore to Shanghai.

The hypothesis on policy transfer actors (international organizations play important roles in sustainable transport policy transfer) was supported with regard to South–South transfer (transfer of BRT) and North–South transfer (emission standards), although their role was quite limited in the latter case. This hypothesis was not supported in the other directions of policy transfer, at least by this set of case studies.

Hypothesis 2 (strong political leadership can provide an opportunity structure for policy transfer) was supported for South–North and South–South policy transfer. Mayors played a central role in the transfer of road pricing to London and the transfer of BRT to Los Angeles and Bogotá. Mayoral leadership was supported by specialized institutions, development plans, and implementation strategies that reflected the leader’s vision. No supporting evidence was found for their roles in North–North and North–South transfer from the examined cases.

All the sample transfer cases showed that bureaucrats played significant roles. It was noteworthy that not only local governments but also national governments were involved in the policy transfer process. The forms of involvement of national government included initiation, implementation, and funding of the program, or influencing the policy decisions through pressure on local government. National government roles were observed in all the sample transfer cases towards the South but in only one case towards the North.

Regarding policy content, the sample transfer cases showed a tendency towards transfer of market-based instruments and direct intervention from the South to both the North and the South, and

information-based instruments from the North in both directions. The creation of markets as an instrument was found to be transferred within the same hemisphere, that is, in North–North and South–South transfers.

Hypothesis 3 (policy innovations that utilize redistributive economic instruments are slow to diffuse) was verified for diffusion originating in the South. Compared to other policy options, road pricing has taken a longer time to diffuse and the number of adoptions of both road pricing and number-plate auctioning are much smaller.

Further research on other key questions of policy transfer, such as the motivation of policymakers to transfer policies, the degree of the transfer, and the barriers to and facilitators of the process, will deepen understanding of the policy transfer process in the area of sustainable transport (Dolowitz and Marsh 1996). Employing a multi-level approach through incorporation of macro-level factors, such as socio-economic background, into the analysis of policy transfers will provide a more comprehensive account. In addition, although this study focuses on “good” policy transfers based on good practices, comparison with “failed” transfer cases to identify those factors that define success and failure would be of benefit for future policy making. Furthermore, cross-sectoral perspectives need to be incorporated in future research, since transportation is not an isolated sector but interrelated with many aspects of urban development. Therefore, to provide meaningful inferences for the development of sustainable development policy, further studies on transfers in other policy areas related to sustainable development are necessary to more clearly distinguish the commonalities and differences regarding the direction of policy transfer, and the defining factors in each direction.

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